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Research Article

EFFECTIVENESS OF SCENARIO BASED SIMULATION ON SAFE SURGERY CHECK LIST UPON BEHAVIORAL OUTCOMES AMONG STAFF NURSES AT APOLLO HOSPITALS, TONDIARPET

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Abstract

Background: The aim of the study was to determine the effectiveness of scenario based simulation on safe surgery upon behavioural outcomes among staff nurses. **Methods and Materials:** A true experimental approach was adopted for this study. The study included 96 staff nurses selected by total enumerative random sampling technique. The selected samples were randomly allocated to control and experimental group by odd and even method systematic random sampling. The present study was conducted at Apollo Hospitals, Chennai, and Tamil Nadu. An extensive review of literature and guidance by experts laid foundation to the development of background variables proforma of staff nurses, structured knowledge questionnaire and the OSCE observation checklist. The data collection tools were validated and reliability was established. Data collection for main study was conducted after two weeks of pilot study. Pre-test assessment was done by using predetermined and pretested tools. The Scenario based simulation on Safe Surgery in the Operation Theatre was conducted as three days program, which consisted of basic concepts about surgery preoperative preparations, identification of adverse events, and the use of safe surgery checklist as three phases Sign in , Time out phase, and Sign out and Students responsibility on Safe Surgery in the Operation Theatre was taught through power-point presentation, lecture cum discussions on first Day (8hrs), skill station with demonstration and return demonstration done on Second day (8hrs). The post-testlevel of knowledge was assessed by structured questionnaire and level of skill was done on Third Day (8hrs) by OSCE (Objective Structured Clinical Examination) method. The level of acceptability was assessed after seven days of the intervention among the experimental group of students. The data obtained was analyzed using appropriate descriptive and inferential statistics. **Results:** There was a significant difference in post-test mean knowledge scores on scenario based simulation between control (10.86 ±4.73) and experiment group (18.97 ± 2.17) of staff nurses (t=10.29 at $p < 0.001$). **Conclusion:** The present study reveals that scenario based simulation on safe surgery is considered as a suitable method to improve the behavioural outcomes among staff nurses.

Key words: Determinants, Diversification of platforms, Television, Households, Cameroon.

INTRODUCTION

An operating theatre, also known as an operating room (OR) or an operating suite, is a facility within a hospital, where surgical operations are carried out in an aseptic environment. An operation theatre (OT) complex is the 'heart' of any hospital, where surgical operations are carried out in a sterile aseptic environment[1]. Surgical care is complex and is prone to errors and subsequent adverse events. The reduction of peri-operative harm is a major priority of healthcare and the reporting of incidents and their causes is an important source of information to improve peri- operative patientsafety[2]. High-tech operating theatres today offer various challenges that require increasingly specialized and qualified operating theatre nurses (OTNs) who have had continuous development of clinical competence in peri-operative nursing[3]. Operating room nurses are like navigators who identify risk factors and strive to protect surgical patients from dangers and follow them through the perioperative process as safely as possible (Blomberg, 2019)[4]. Operating theatres are highly specialized units that are laborious as well as technology intensive. An operating theatre suite consists of a set of atriums, which are built to specifications to ensure good lighting, good clean airflow and ergonomicmovements[5].

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Surgical care has been an essential component of health care worldwide for over a century. Surgery is often the only therapy that can alleviate disabilities and reduce the risk of death from common conditions. Every year, many millions of people undergo surgical treatment, and surgical interventions account for an estimated 13% of the world's total disability-adjusted lifeyears[6]. Surgery was defined as "any procedure occurring in the operating room involving the incision, excision, manipulation or suturing of tissue that usually requires regional or general anesthesia or profound sedation to control pain[7]. Patient safety in the perioperative period remains a challenge, and the demand for a process that reduces risk grows with greater awareness of this problem. (WHO Safe Surgery Saves Lives, 2009). WHO has undertaken a number of global and regional initiatives to address surgical safety. Much of this work has stemmed from the WHO Second Global Patient Safety Challenge "Safe Surgery Saves Lives". Safe Surgery Saves Lives set about to improve the safety of surgical care around the world by defining a core set of safety standards that could be applied in all WHO member states[8]. Surgical exposure is incorporated into the curriculum of virtually all medical and Nursing schools, and widely considered a necessary component of the undergraduate experience. Recently, each year thousands of medical students make their first foray into a 'classroom' which bears little resemblance to any they have experienced before operating theatre[9]. Simultaneously, medical educators adopt the role of the teacher in this unique environment. As a learning environment,

operating theatres have many resources to be exploited. Changing the teaching domain (e.g., from classroom to outdoors) is recognized within education as potentially beneficial[10]. NPSG 4 Goal is to eliminate wrong-site, wrong-patient, and wrong- procedure surgery using a preoperative verification process to confirm documents and to implement a process to mark the surgical site and involve the patient/family (The Joint Commission, 2013). Simulation as a technique that can be used "to replace or amplify real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner" (Tosterud, 2015). Thus, introducing the health professional student to the novel theatre environment may incite interest and heighten the senses. Theatre naturally offers multimodal stimuli, and consequently is inviting to students of all learning styles: visual, auditory, read/write and Kinesthetic[11]. The traditional aim of improving clinical/exam-related performance is addressed, but students also gain an understanding of surgical specialties, learn about 'Safe Surgery' in Operation theatre and may be inspired in future career choice. "Going to theatre gives students a better understanding of Time out procedure in OR than they get just reading textbooks" [12].

Statement of the problem

A Study to Assess the Effectiveness of Scenario Based Simulation on Safe Surgery upon Behavioural Outcomes among staff nurses at Apollo Hospitals, Tondiarpet.

Objectives

- To assess the behavioural outcomes (knowledge and skill) among control and experimental group of staff nurses in pre-test and post-test.
- To determine the effectiveness of scenario-based simulation on safe surgery by comparing the behavioural outcomes (knowledge and skill) on safe surgery among the control and experimental group of staff nurses.
- To find out the correlation between the behavioural outcomes (knowledge and skill) on Safe Surgery among the control and experimental group of staff nurses

MATERIALS AND METHODS

A true experimental approach was adopted for this study. The research design used in this study was a true experimental pre-test - post test design. It full-fills the criteria such as manipulation with randomization and control. The study included 96 nurses selected by total enumerative random sampling technique. The selected samples were randomly allocated to control and experimental group by odd and even method (systematic random sampling) as per their attendance roll numbers. The present study was conducted at Apollo Hospitals, Chennai. The independent variables of the study were Scenario based simulation on safe surgery in the operation theatre (independent variables) and the dependent variables were the behavioural outcomes (knowledge and skill) of Staff nurses on Safe Surgery in the Operation theatre (dependent variables). An extensive review of literature and guidance by experts laid foundation to the development of background variables proforma of nursing students, structured knowledge questionnaire and the OSCE observation checklist regarding the Scenario based simulation on Safe Surgery in the Operation Theatre. The data collection tools were validated and reliability was established. Data collection for main study was conducted after two weeks of pilot study. Pre-test assessment was done which included the background variables, the pre-test level of knowledge and skill on Safe Surgery in the Operation Theatre using predetermined and pretested tools. The Scenario based simulation on Safe Surgery in the Operation Theatre was conducted as three days program, which consisted of basic concepts about surgery pre-operative preparations, identification of adverse iii events, and the use of safe surgery checklist as three phases Sign in (Briefing phrase), Time out phase, and Sign out (Debriefing phrase) and Students responsibility on Safe Surgery in the Operation Theatre was taught through power point presentation, lecture cum discussions on first Day (8hrs), skill station with demonstration and return demonstration done on Second day (8hrs). The post-test level of knowledge was assessed by structured questionnaire and level of skill was done on Third Day (8hrs) by OSCE (Objective Structured Clinical Examination) method. The level of acceptability was assessed after seven days of the intervention among the experimental group of students. The data obtained was analyzed using appropriate descriptive and inferential statistics such as mean and standard deviation and inferential statistics such as paired t-test, independent t-test and Karl Pearson's coefficient correlation test.

RESULTS AND DISCUSSION

More than half of them belonged to Hindu religion (69%,52 %) in control and experimental group. Regarding residence 35.4% of them were from Rural area in control group and 35.4% were from Urban in experimental group. Majority of them studied in English medium in school (66.7%,75%) in control and experimental group, respectively. In control group, majority of them had inadequate knowledge in pre-test (68.75 %) and post-test (72.91 %).Whereas after the Scenario based simulation regarding safe surgery in OT, most of the students had adequate knowledge (91.66%) in post-test, 8.33% of them had moderately adequate knowledge and none of them had inadequate knowledge in post- test in experimental group when compared to pre-test, in which most of them had inadequate knowledge(75 %).

The data in control group all of them had inadequate skill (100%) and none of them had adequate skill in pre-test and post test. Where as in experimental group, after the Scenario based simulation regarding safe surgery in OT. All of them had (100%) adequate skill and none of them had inadequate skill in post-test. in pre-test there was no significant difference in knowledge scores between control (M=12 and SD=4.80) and experimental group(M=12and SD=5) with 't' value of0.08 at(P=0.9324). However, in Post-test, there was a significant difference in knowledge scores between control (M=13, SD=4.7) and experimental group with (M=26, SD=2) with 't'value of 17.76at $p<0.001$. Study findings that in pre-test there was no significant difference in skill scores (M=13, SD=4.2) between control and experimental group (M=14, SD=3.3) with 't' value 1.63 (p=0.1061).There was significant difference in post-test skill scores between control group (M=18, SD=4.4) and experimental group (M =48,SD=1.47) with 't' value of 44.30 ($p<0.001$). The findings were congruent with the study conducted by Suresh et al. (2021). In this study they conducted a cross-sectional observational study to identify the adherence to various elements of the Modified World Health Organization Surgical Safety Checklist (WHO SSC) for neurosurgery by the operating room (OR) team.

Table 1. Frequency and Percentage Distribution of Level of Pre-test and Post-test Knowledge Scores on Safe Surgery among Control and Experimental Group of Nurses N=96

Knowledge	Control Group (n=48)				Experimental Group (n=48)			
	Pre-test		Post-test		Pre-test		Post-test	
	f	%	f	%	f	%	f	%
Inadequate≤14	33	68.75	35	72.91	36	75	0	0
Moderatelyadequate(15-22)	11	22.91	10	20.8	10	20.8	4	8.33
Adequate(23-30)	4	8.3	3	6.25	2	4.16	44	91.66

Table 2. Frequency and Percentage Distribution of Level of Pre-test and Post-test Skill Scores Regarding Effectiveness of Scenario Based Simulation on Safe Surgery among Control and Experimental Group of Nurses. N=96

Skill	Control Group (n=48)				Experimental Group (n=48)			
	Pre-test		Post-test		Pre-test		Post-test	
	f	%	F	%	f	%	F	%
Adequate(39-50)	0	0	0	0	0	0	48	100
Moderatelyadequate(25-38)	0	0	0	0	1	2.08	0	0
Inadequate(Below25)	48	100	48	100	47	97.91	0	0

Table 3. Comparison of Mean and Standard Deviation between Control and Experimental Group of Nurses in Pre-test and Post-test Knowledge Scores Regarding Scenario based Simulation on Safe Surgery. N=96

Knowledge	Control group (n=48)		Experimental group (n=48)		Mean Difference	Independent 't' Value	P value
	Mean & (Mean %)	SD	Mean & Mean %)	SD			
Pre-test	12 (40)	4.8	12 (40)	5	0.2	0.08	P=0.9324
Post -test	13 (43)	4.7	26 (52)	2	13	17.76***	P<0.001

(***P<0.001.)

Table 4. Comparison of Mean and Standard Deviation between Control and Experimental Group of Nurses in Pre-test and Post-test Skill Scores Regarding Scenario Based Simulation on Safe surgery N=96

Variables	Control group (n=48)		Experimental Group (n=48)		Mean Difference	Independent 't' Value	P value
	Mean & (Mean %)	SD	Mean & (Mean %)	SD			
Pre-test	13 (26)	4.2	14 (28)	3.3	1	1.63	P=0.1061
Post –test	18 (36)	4.4	48 (96)	1.47	30	44.30***	P<0.001

Table 5. Correlation between the Knowledge and Skill Scores Regarding Scenario Based Simulation on Safe Surgery in the Operation Theatre among Nurses. N=96

Assessment	Variables	Control group		Experimental group	
		'r' value	'p' Value	'r' Value	'p' Value
Pre-test	Knowledge Skill	0.7840	0.00001	0.8683	0.0000
Post-test	Knowledge Skill	0.1069	0.3323	0.1994	0.05144

In the post-test there was an improvement in the mean knowledge scores of both traditional and integrated group. The time required for completion of sign-in phase of the check list was 132±11 seconds. The time-out and sign-out phases of the checklist were completed in 91 ± 09 seconds and 62 ± 08 seconds, respectively. The team member's participation reported by checklist coordinators was as follows- Excellent80.5%; good 17.5%; and poor 2%. Distraction levels during checklist. Studies suggest that there is a need to enable technical and non –technical performance of the surgeon and circulating staff and to be assessed by experts situated in an adjacent control room, and provide an opportunity for constructive feedback. The scenarios have good face validity and junior nurses can benefit from the process of learning new technical skills in a realistic environment. Study findings reveals that, inpre-test there was a significant positive correlation between pre test knowledge and skill scores in control and experimental group (p<0.001). Whereas in post - test, there was no significant correlation between knowledge and skill scores in both control and experimental group (p>0.05). Study findings reflect that there is a need to increase the use of high –fidelity SBL in perioperative nursing knowledge gaps on matters such as effective resourceuse and specific approaches to using this method. The Scenario based simulation method was highly acceptable among experimental group (91%). Certainly, it is not an easy matter of finding acceptability of any program that fits to the needs and wants of all the participants. The high level of acceptability of this program indicates the fact that the intervention was well planned and implemented effectively. Researcher also developed confidence in managing the students while conducting Scenario based simulation on safe surgery in the operation theatre.

Conclusion

The study findings revealed that scenario-based simulation teaching method was effective in improving the knowledge and skill of staff nurses regarding Safe surgery in the operation theatre. Scenario based simulation teaching method is powerful teaching tool that can be incorporated in nursing to improve the competency and performance of the nurses while taking care of the surgical patients with 3 phases (Sign in, Time out, Sign out).

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Conflict of interest: Nil

REFERENCES

1. Ahmed, H. H. (2019). Adopting scenario based learning in critical care nursing education: Students' achievement and feedback. *American Journal of Nursing*, *7*(4), 581-588.
2. Asefzadeh, S., Rafiei, S., Saeidi, M., & Karimi, M. (2017). Compliance with WHO safe surgery check list in operatin grooms: A case study in Iran Hospitals. *Bali Medical Journal*, *6*(3), 465-469.
3. Arriaga, A. F., Bader, A. M., Wong, J. M., Lipsitz, S. R., Berry, W. R., Ziewacz, J.E. & Gawande, A. A. (2013). Simulation-based trial of surgical-crisis checklists. *N Engl J Med*, *368*, 246-253.
4. A,J. (2021). Improving nursing documentation for surgical patients in a referral hospital in Freetown, Sierra Leone: protocol for assessing feasibility of a pilot multifaceted quality improvement hybrid type project. *Pilot and feasibility studies*, *7*(1), 1-13.
5. Blomberg, A. C., Lindwall, L., &Bisholt, B. (2019). Operating theatre nurses' self-reported clinical competence in perioperative nursing: Amixed method study. *Nursing open*, *6*(4),1510–1518.https://doi.org/10.1002/nop2.352
6. Cha, J.S., & Yu, D. (2021). Objective Measures of Surgeon Nontechnical Skillsin Surgery: A Scoping Review. *Human Factors*, 0018720821995319.
7. Croghan, S. M., Phillips, C., &Howson, W. (2019). The operating theatre as a classroom: a literature review of medical student learning in the theatre environment. *International Journal of Medical Education*, *10*,75–87.https://doi.org/10.5116/ijme.5ca7.afd1
8. Cumin, D., Skilton, C., & Weller, J. (2017). Information transfer in multidisciplinary operating room teams: a simulation-based observational study. *BMJ quality & safety*, *26*(3), 209-216.
9. Everett, T. C., Morgan, P. J., Brydges, R., Kurrek, M., Tregunno, D., Cunningham, L. &Tarshis, J. (2017). The impact of critical event checklists on medical management and teamwork during simulated crises in a surgical daycare facility. *Anaesthesia*, *72*(3), 350-358.
10. Manju Sudhakar, Sasikala Dhakshinamoorthy. Awareness regarding Antibiotic Stewardship among nurses at selected hospitals, Chennai. *Research Journal of Pharmacology and Pharmacodynamics.* 2021; 13(3):86-8.
11. Etherington, N., Larrigan, S., Liu, H., Wu, M., Sullivan, K. J., Jung, J., &Boet, S.(2021). Measuring the teamwork performance of operating room teams: a systematic review of assessment tools and their measurement properties. *Journal of inter professional care*, *35*(1), 37-45.
12. Fourcade, A., Blache, J. L., Grenier, C., Bourgain, J. L., & Minvielle, E. (2012). Barriers to staff adoption of a surgical safety checklist. *BMJ quality &safety*, *21*(3), 191-197.
13. Gawande, A.A., Thomas, E.J., Zinner, M.J., & Brennan, T.A. (1999). The incidence and nature of surgical adverse eventsin Colorado and Utahin1992. *Surgery*, *126*(1), 66-75.
14. Manju Sudhakar, Sasikala Dhakshinamoorthy., Effectiveness-of-augmented-walking-upon-functional-status-among-post-operative-cabg patients at selected hospitals Chennai. IJSR https://www.worldwidejournals.com/international-journal-of-scientific-research (IJSR)/file view/_March_2023_3126688870_7034191.pdf.https://www.doi.org/10.36106/ijsr.
15. Shamna Majeed Abdul Majeed, Shambhavi. Effectiveness of planned teaching programme on knowledge and practice of endotracheal suctioning among staff nurses in selected hospitals of Mangalore. *Asian J. Nur. Edu. and Research* 3(4): Oct.- Dec., 2013; Page 243-247.
16. Azizzadeh Forouzi M, Heidarzadeh A, Kazemi M, Jahani Y, Afeshari M. Comparison of the Combined based with the mannequin based simulation models in self efficacy, performance and satisfaction of nursing students on Cardiopulmonary Resuscitation. *Asian J. Nur. Edu. and Research.*

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